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Drugs, economics and policy

Frey, Bruno S

Abstract: Drug II Let the market work There is no necessary link between drug consumption, addiction and social disintegration. Empirical evidence suggests that a considerable share of the population has consumed illegal drugs during some period of their lives. A substantial proportion of drug users have a job and home. Many 'mature out' of drug consumption in their thirties. Most drug users are normal consumers responding systematically to relative prices. After the failure of a repressive drugs policy, Switzerland allows cities to pursue a 'third way' between repression and liberalization. The state allows carefully screened heavy addicts to inject heroin at a nominal price, while at the same time raising the cost to potential entrants. The 'experiment' has produced encouraging results. The health of heroin users has improved and crime has been reduced. A homogenized drugs policy in the European Union would probably disallow such promising programmes. — Bruno S.Frey

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SUMMARY

There is no necessary link between drug consumption, addiction and social disintegration. Empirical evidence suggests that a considerable share of the population has consumed illegal drugs during some period of their lives. A substantial proportion of drug users have a job and home. Many 'mature out' of drug consumption in their thirties. Most drug users are normal consumers responding systematically to relative prices.

After the failure of a repressive drugs policy, Switzerland allows cities to pursue a 'third way' between repression and liberalization. The state allows carefully screened heavy addicts to inject heroin at a nominal price, while at the same time raising the cost to potential entrants. The 'experiment' has produced encouraging results. The health of heroin users has improved and crime has been reduced. A homogenized drugs policy in the European Union would probably disallow such promising programmes.

— Bruno S. Frey

Drugs, economics and policy

Bruno S. Frey

University of Zurich

1. THE ISSUES

Illegal drugs constitute a major social problem all over the world. They have sparked off an enormous amount of literature in several scientific fields. This also holds true for the economics of drugs.¹ Nevertheless, there are strongly divergent views about which policy is desirable, and these are reflected in the widely different approaches taken in various countries. There seems to be a consensus only in one respect: drug consumption is considered to be bad, especially for juveniles. This tends to lead to a gut reaction of the sort: 'I do not want my children to become drug addicts, and therefore drug consumption has to be suppressed by all means available.'

A major objective of this paper is to demonstrate that such a gut reaction is mistaken. Drug consumption can never be eradicated by repression, for good economic reasons. As long as there is a demand for drugs, an increase in expected punishment raises the incentives to act against the prohibition, thereby making deterrence less effective. This can be and has been done in a number of ways. Quite legally, it pays drug dealers and consumers to hire ever better lawyers to evade punishment. The same can be attempted by bribing police and legal agents.

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¹ Recent contributions with extensive references to the literature are Evans and Berent (1992), Pommerehne (1994), Miron and Zwiebel (1995), Hartwig and Pies (1995) and Erlei (1995).

Moreover, the law is designed to match the severity of the punishment with the seriousness of the crime committed. In Europe at least, judges are unwilling to impose very high sanctions for minor drug offences because they are not allowed to jack up the punishment to compensate for the often low probability of an offender being captured. For all these reasons, the *effective* expected punishment by drug dealers and consumers is upwardly bounded. It is therefore not possible to establish a sufficiently high deterrent to reduce or abolish such activities, as all efforts at prohibition (including alcohol and prostitution) document (see Thornton, 1991). Even if deterrence worked (which it does not), it would not be optimal to have an extremely high deterrent; just as it would not be socially optimal to reduce environmental pollution to zero. A sound drugs policy therefore seeks to minimize the harmful effects of drugs.

This paper deals with two widely misunderstood aspects of drug consumption. Section 2 investigates the question ‘Who consumes drugs?’, while section 3 deals with the nature of the addiction. The experience with drugs policy in the city of Zurich is discussed in section 4, which leads to a summary of pertinent consequences for drugs policy in Europe in section 5.

2. WHO CONSUMES DRUGS?

According to a prevalent view, drug users are ‘addicts’ who do not earn any income from regular work (but rather finance their vice by illegal drug dealings, robberies and property crimes, and prostitution) and are socially disintegrated (they live on the streets and do not have a home). The vast majority of ‘normal’ people have to be protected against such addiction. However, existing evidence provides a starkly different picture of reality. Two stylized facts are crucial: (1) many consume drugs; and (2) many drug users function normally.

2.1. Many consume drugs

A substantial proportion of the population have used illegal drugs during some period of their lives. In the USA, around 30% of the population (older than 12 years) have consumed marijuana at least once, and more than 10% have tried cocaine; among college students more than 50% have taken illegal drugs (US Department of Justice, 1994). For Germany, the respective figure for lifetime consumption is 16% (Hartwig and Pies, 1995); for Switzerland, 17% (Rehm, 1995). These figures are lower-bound estimates as the illegality of drugs tends to drive consumption underground. Thus, drugs are consumed by many otherwise perfectly ‘normal’ persons despite the repressive policy. Care should therefore be taken not to designate such a large proportion of the population as ‘criminal’ because the attribute would then become meaningless and lose its deterring function.

2.2. Many drug users function normally

Most drug consumers are not addicts; nor do they lead a miserable life. Rather, 'many regular drug users are productive, functioning members of society' (Miron and Zwiebel, 1995; Zinberg, 1979). A study for Switzerland (Künzler, 1990) reveals that 68% of drug consumers in Zurich are 'socially totally integrated', in the sense of having regular work *and* regular housing conditions (according to the high Swiss standards); another 26% are 'partially integrated', having *either* regular work *or* regular housing. A later study (Müller and Grob, 1992) again for Zurich, using somewhat different definitions of work and housing, found 49% to be 'totally integrated' and another 30% to be at least 'partially integrated'. A large majority (65%) accordingly finance their drug consumption by (legally) working, 20% by using the money given by social institutions, and 29% by 'irregular' (8% by prostitution) or illegal activities such as drug dealing and property crimes (multiple answers were admitted).

Existing research also suggests that drugs are less harmful than commonly portrayed (see Miron and Zwiebel (1995) and Hartwig and Pies (1995) for references). Thus, heroin can be consumed over extended periods without damaging health, and there is little evidence that it lowers work productivity. The strongly negative consequences on health and productivity are due to the repression associated with illegality: in particular, the induced uncertainty about the quality of the drugs bought, which is responsible for most accidental deaths.

All this, of course, does not mean that drugs are harmless, and that there is not a sizeable group of persons who ruin their lives by drug consumption, especially under drug prohibition. But it indicates that the consumption of drugs is rather widespread in our society (and elsewhere), and that there is no 'iron law' leading to hopeless addiction.

3. ADDICTION OR CESSATION?

While drug consumption is widespread, most persons just try it between one and five times, and are thereafter abstinent. In Germany, among the 16% who had consumed drugs once in their lifetime, only 5% had taken them within the last year. In Switzerland, among the 17% of people who had consumed drugs at some time during their life, only 2% are current consumers. Obviously, a large number of users have not become addicted. This finding is generally disbelieved by the public because it is inconsistent with the awful picture of the visible drugs scene, as well as the popular view of drug consumption taking a progressive, irreversible course.

A substantial proportion of drug users experience what has been called a 'natural recovery' (see, for example, the surveys in Fahrenkrug *et al.* (1995); Waldorf and Biernacki (1979); Stall and Biernacki (1986)). A comparison of seven longitudinal studies (Abegg, 1992) suggests the presence of natural recovery for different groups

of drug consumers. Nobody claims that *all* drug users stop consuming drugs, but a substantial number do so on their own. The proportion has a similar magnitude to those who quit with the help of professional and extensive medical treatment. The phenomenon was first observed for Vietnam veterans: many of them took heroin while in east Asia, but an overwhelming majority stopped doing so upon their return to the USA (Winick, 1962; Robins, 1993). The existence of quantitatively significant natural recovery has also been shown for Germany and Switzerland (e.g., Weber and Schneider, 1992; Klingemann, 1995).

The major determinant of untreated cessation of drug consumption is simply age. This 'maturing out' of drug consumption is quite compatible with a normal economic relative price effect. The opportunity cost of drug consumption rises with age because the alternatives relating to gainful (legal) employment and a satisfactory family life become more attractive. Moreover, the cost of staying in the drugs scene increases when people can no longer depend on the material and psychological support of their parents, but have to take over the responsibility for their own life.

Empirical evidence is consistent with this interpretation. Most studies find that many people stop taking drugs in their thirties. An analysis of five studies (Abegg, 1992) revealed that one did not find any evidence while four clearly did: after three years or more, between 23% and 65% of the drug-taking population totally abstained and were fully socially integrated. Abegg's (1992) own study shows that drug consumption drastically falls for people more than 30 years of age. The earlier the start of the drug career, the less likely and the later is the 'maturing out'. The empirical research also supports the importance of alternatives in the form of satisfactory work opportunities and partnerships, but not of the deterrence of repressive policy (SFA, 1989).

The discussion in sections 2 and 3 suggests that the economic model of human behaviour also works for drugs (which is, of course, the basis of the analysis by Becker and Murphy (1988)): a substantial proportion of drug users are normal consumers, and only a small minority are 'addicted' in the sense that they do not have any choice. In particular, available evidence is inconsistent with the view of a systematic underestimation of the cost that drug users face in the future (see Miron and Zwiebel (1995) for references).² Rather, drug consumers react systematically to changes in benefits and costs.

4. THE ZURICH DRUGS POLICY EXPERIMENT

As would be expected in a socially and politically rather conservative country (which still maintains features elsewhere prevalent in the 19th century), the drugs policy in

² According to Viscusi (1994), in the case of smoking people even *overestimate* the health risks.

Switzerland was for a long time based on repression.³ It was thought possible to suppress drug consumption by police actions and sentencing drug dealers and users, even in the case of 'soft' drugs such as marijuana. This belief proved to be mistaken, especially in the case of the country's largest city, Zurich. As theoretically expected, the repressive policy proved to be ineffective. In 1987, despite continuous interventions, the police could not even prevent the emergence of an open drugs scene just behind the main railway station, the infamous 'Needle Park'. It quickly turned into a most ugly scene. The park was filthy and full of rubbish, and was populated by heavy drug users, some of whom were in very bad health. At the same time, the drugs supply was taken over by strictly organized gangs, who sold drugs at specially low prices to adolescents and even schoolchildren. The drugs market was not stable as the huge opportunities for profit attracted more and more new gangs from other countries (mostly the Lebanon, Albania and parts of Africa). This predictably (see, e.g., Gambetta, 1993) led to gang wars, and several people were stabbed, shot and killed. Property crimes committed by drug consumers rose exponentially. When the external cost grew intolerable to the inhabitants and tourists, the city government decided to close the park by brute police force. But the drugs scene immediately sprang up in another place, an abandoned railway station called 'Letten', where the same intolerable situation arose.

The city's political leadership finally saw the futility of a purely repressive policy, and in 1994 decided to try a 'third way' between repression and liberalization. This programme, which continues today (April 1997), is based on three pillars. The first, and by far the most important, is for the city government to provide drugs, mostly heroin, under controlled conditions to carefully screened heavily addicted drug users. Only a nominal price of 10 Swiss francs per day is asked, whereas the cost per gram of heroin to the city government is 13 Swiss francs, and average consumption per participant per day is 0.5 grams. Participants have to consume (inject) the heroin in special offices, and thus the drugs cannot be traded. Only persons having lived in Zurich for an extended period and with a long drug-taking career and several futile attempts at medical and psychological treatment were accepted for the programme.⁴ A second pillar of the policy is that the participants must attend regular discussion and counselling sessions, and undergo medical observation. The third pillar is police action aiming to raise entry cost to non-drug users. An effort is made to prevent drug consumption in public, but the police are well aware that it is impossible to suppress drug consumption within buildings and at home. The police take a rather liberal position with respect to 'designer drugs' because it is virtually impossible to control them effectively in discos and at parties.

³ See Uchtenhagen *et al.* (1996); Fahrenkrug *et al.* (1995); Suter (1995) and a large number of publications by the Bundesamt für Gesundheitswesen, the Sozialamt Zürich and the Arbeitsgemeinschaft für risikoarmen Umgang mit Drogen.

⁴ Initially 2250 and then 1000 people could take part.

So far only a preliminary scientific evaluation is available (Uchtenhagen *et al.*, 1996). Yet it is already quite clear that the policy of the 'third way' is quite successful. The health of the heavy drug users in the programme has improved dramatically and no deaths due to drug taking have occurred. Participants also produce much less external cost. No less than half of them now have a regular job, and four-fifths no longer commit property crimes. More than two-thirds now live in an apartment and can be considered to be socially integrated. These improvements can be attributed to the programme. Thus, for example, at the beginning only 16% of the participants held a regular job, but this increased to 50% after twelve months in the programme. Conversely, at the beginning 50% were unemployed, but this fell to 14% after one year. Similarly, at the outset of the programme, 12% committed heavy and petty theft, and 54% were engaged in drug crimes, but these figures fell to 2% and 20%, respectively. The criminal and social situation in the city of Zurich has thus improved markedly, mainly due to drawing these heavy drug users away from the illegal drugs market. This success has been appreciated by the voters, many of whom were initially sceptical or even outrightly hostile to the state 'handing out heroin'. In a popular referendum which took place in December 1996, the citizens of the city of Zurich approved the new drugs policy with a majority of 63%, which is a high rate of support even compared to other referenda.

While it is too early to draw firm and final policy conclusions, it can certainly be said that the 'third way' undertaken in Zurich looks promising. The same holds for similar experiments in other Swiss cities. The experiment may well serve as a model for other political units.

5. A HOMOGENIZED EUROPEAN DRUGS POLICY?

Most countries of the European Union pursue a strongly repressive drugs policy (see, e.g., Hartwig and Pies, 1995; Linder, 1995); only the Netherlands and Spain are more liberal. Due to the attraction of drug users to where drugs are more easily available, it seems at first sight necessary to harmonize drugs policy in a Europe without frontiers. However, the example of the city of Zurich shows that it is possible, at least to some extent, to pursue an independent drugs policy even in a small area.

Due to the overwhelming number of drug-repressive EU member countries, a homogenization of drugs policy will probably result in a repressive approach on the European level. To the extent that such a European drugs policy already exists, it does indeed follow this course (see Mahnke, 1995). For the reasons discussed, a repressive policy entails huge material and human costs, and will almost certainly prove to be ineffective (similarly to the policy pursued in the USA: see Miron and Zwiebel (1995)). Consequently, programmes like that of Zurich, although they show great promise, would be impossible to introduce. Drugs policy is a clear instance in which variety instead of equalization tends to lead to superior results.

General discussion

Charles Wyplosz felt that the economic argument for restricting drug use must derive from some associated negative externality. Clearly, crime committed by drug addicts and drug dealers was an important externality, but then, as for any criminal activity, the solution is to punish the crime itself rather than the underlying motivations for crime. Georges de Ménil noted that apart from the criminality involved, drug addiction imposes a massive externality on publicly funded health systems, and also contributes to other social ills such as potential violence and increased traffic accidents. Vidar Christiansen added that the families of drug addicts, and the neighbourhoods they live in, also bear the brunt.

For Hans-Werner Sinn the search for externalities smacked too much of a liberal approach, which implicitly assumes that individuals are completely rational. He argued that there was a contradiction between the claimed liberalism and the paternalism implicit in the policy recommendations. For instance, the suggestion that making drugs available cheaply to addicts will destroy the illegal drugs market, and that this, in turn, will reduce overall drug use, assumes myopic behaviour at the individual level. If, on the contrary, individuals are rational and sufficiently forward looking, the prospect of cheap drugs in the future may even persuade many more to try drugs. In other words, cheap drugs as a policy works only if people are myopic and irrational, but in that case the liberal approach is suspect to begin with. If preferences are fickle, a paternalistic approach is superior as it starts from the presumption that individual preferences should not be trusted.

Daniel Cohen felt that the possibility of dynamically inconsistent behaviour justified intervention: it is often the case that a drug addict wants to quit and yet is unable to do so. The price elasticity of demand for drugs was relevant here. For instance, if the quantity demanded is relatively fixed, one could confine attention to eliminating the externalities. Klaus F. Zimmermann agreed that intertemporal inconsistency of individual preferences called for regulation, and suggested that the standard theories of preference formation might prove useful in designing the best form of regulation.

The policy alternatives to combat drug use were also discussed. Charles Wyplosz thought that one solution was to combine liberalization with high taxation to deter the use of drugs. This would be similar to the UK policy to restrict the use of tobacco. Georges de Ménil believed that there was not a simple continuum between liberal and repressive drugs control policies. As shown by the Dutch experience, the specifics of the drugs control policy had a significant impact on the outcome. Juan Dolado questioned the possibility of segregating addicts and newcomers in the drugs market. Michele Polo felt that in the real world the distinction between liberal and paternalistic policies is not very sharp. With drugs the important issues were marginal deterrence and preventing addicts switching from soft to hard drugs. The

best way to do this was to have a system of graduated penalties, and perhaps even a slight liberalization of soft drugs. David Begg noted that while everyone agreed that the current system was not working very well, when it came to policy alternatives, perfect paternalism had been stacked against imperfect liberalism. The paper needed to take a harder look at what precisely is wrong with the current system before proposing any policy responses.

Giorgio Basevi wondered if there should there be a Europe-wide policy on drugs. He enquired if the survey data had taken account of the fact that many drug addicts are introduced to drugs in prison. Patrick Rey, reacting to Bruno Frey's remarks, pointed out that addicts, by definition, must be those who cannot shake off the drug habit.

REFERENCES

- Abegg, E. (1992). 'Die Drogenszene in Zürich. Herauswachsen aus der Drogenabhängigkeit', *Forschung und Dokumentation Nr 3*, Pedagogical Institute, University of Zurich.
- Albrecht, H.-J. and A.v.Kalmthout (1989). 'European perspectives on drug policies', in H.-J. Albrecht and A.v. Kalmthout (eds.), *Drug Policies in Western Europe*, Eigenverlag Max-Planck-Institut für ausländisches und internationales Strafrecht, Freiburg i.Br.
- Anjewierden, O. and J.M.A.v. Atteveld (1989). 'Current trends in Dutch opium legislation', in H.-J. Albrecht and A.v. Kalmthout (eds.), *Drug Policies in Western Europe*, Eigenverlag Max-Planck-Institut für ausländisches und internationales Strafrecht, Freiburg i.Br.
- Becker, G.S. and K.M. Murphy (1988). 'A theory of rational addiction', *Journal of Political Economy*.
- Bricolo, R. (1996). 'Italy – drugs, prisons and treatment', *Penal Lexicon*, Internet, URL: <http://www.penlex.org.uk/eurodrug.html>.
- Bundeskriminalamt (BKA) (1996). *Rauschgiftjahresbericht Bundesrepublik Deutschland 1995*, Wiesbaden.
- Bundesregierung (1993). *Politik gegen Drogen*, Bonn.
- Cattacin, S., B. Lucas and S. Vetter (1996). *Modèle de Politique en Matière de Drogue. Une Comparaison de six Réalités Européennes*, L'Harmattan, Paris.
- Commission of the European Communities (no year). *Eurobarometer 37. European Week for Drug Abuse Prevention*, Institute for Hygiene and Epidemiology, Brussels.
- Drugtext (1996). *USA Country Pages on Austria, Belgium, Denmark, France, Greece, Ireland, Luxemburg, The Netherlands, Norway, Spain, Sweden, United Kingdom*, Internet, URL: <http://www.drugtext.org/drugtext.html>.
- Erlei, M. (1995). *Mit dem Markt gegen Drogen!?*, Schäffer-Poeschel, Stuttgart.
- Es, K.v., F. Bosman and J.v. Soer Clemm v. Hohenberg (eds.) (1995). *Drogenszene Europa. Politik zwischen Repression und Duldung*, Rasch und Röhring, Hamburg.
- Estievenart, G. (1993). 'The fight against drugs after Maastricht and the role of the European Monitoring Centre for Drugs and Drug Addiction', in European Monitoring Centre for Drugs and Drug Addiction (EMCDDA), *Health Related Data and Epidemiology in the European Community*, Brussels and Luxembourg.
- European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) (1996). *Annual Report on the State of the Drugs Problem in Europe 1995*, mimeo.
- Evans, R.L. and I.M. Berent (1992). *Drug Legalization: For and Against*, Open Court Press, La Salle, IL.
- Fahrenkrug, H., J. Rehm, R. Müller, H. Klingemann and R. Linder (1995). *Illegale Drogen in der Schweiz 1990–1993*, Seismo, Zurich.
- Farrell, G., K. Mansur and M. Tullis (1996). 'Cocaine and heroin in Europe 1983–93', *British Journal of Criminology*.
- Gambetta, D. (1993). *The Sicilian Mafia: The Business of Private Protection*, Harvard University Press, Cambridge, MA.
- Hartwig, K.H. and I. Pies (1995). *Rationale Drogenpolitik in der Demokratie*, Mohr (Siebeck), Tübingen.
- Jansson, O. (1992). 'Normalization of the drugs problem: an outline of the Dutch drugs policy', in W.E. Kriminalpolitikforschung (ed.), *Legalisierung von Heroin. Die neue Debatte*, Universitätsbuchhandlung, Bremen.
- Kaiser, G. (1994). 'International experience with different strategies of drug policy', *EuroCriminology*.
- Kalmthout, A.v. (1989). 'Characteristics of drug policy in the Netherlands', in H.-J. Albrecht and A.v. Kalmthout (eds.), *Drug Policies in Western Europe*, Eigenverlag Max-Planck-Institut für Ausländisches und Internationales Strafrecht, Freiburg i.Br.
- Keating, M. (1996). 'Portugal – drugs, prisons and treatment', *Penal Lexicon*, Internet, URL: <http://www.penlex.org.uk/eurodrug.html>.

- Klingemann, H. (1995). 'Therapie und Betreuung', in H. Fahrenkrug, J. Rehm, R. Müller, H. Klingemann and R. Linder (eds.), *Illegale Drogen in der Schweiz 1990–1993*, Seismo, Zurich.
- Kreuzer, A., R. Römer-Klees and H. Schneider (1991). *Beschaffungskriminalität Drogenabhängiger*, Bundeskriminalamt, Wiesbaden.
- Künzler, H.P. (1990). 'Analyse der offenen Drogenszene "Platzspitz" in Zürich', dissertation, Medical Faculty of the University of Zurich.
- Leuw, E. and I. Haen Marshall (eds.) (1994). *Between Prohibition and Legalization: The Dutch Experiment in Drug Policy*, Kugler, Amsterdam/New York.
- Linder, R. (1995). 'Überblick über die Situation in verschiedenen Ländern', in H. Fahrenkrug, J. Rehm, R. Müller, H. Klingemann and R. Linder (eds.), *Illegale Drogen in der Schweiz 1990–1993*, Seismo, Zurich.
- Mahnke, M. (1995). 'Europäische Drogenpolitik', in M. Erlei (ed.), *Mit dem Markt gegen Drogen!?*, Schäffer-Poeschel, Stuttgart.
- Meyer, J. (1987). *Betäubungsmittelstrafrecht in Westeuropa*, Max-Planck-Institut für ausländisches und internationales Strafrecht, Freiburg i.Br.
- Ministerie VWS (1994–5). *Drugs Policy in the Netherlands: Continuity and Change*, Internet: URL: <http://www.minvws.nl/drugnota/0/drugall.htm>.
- Miron, J.A. and J. Zwiebel (1995). 'The economic case against drug prohibition', *Journal of Economic Perspectives*.
- Müller, Th. and P.J. Grob (1992). 'Medizinische und soziale Aspekte der offenen Drogenszene Platzspitz in Zürich 1991', mimeo., Institut für Suchtforschung, University of Zurich.
- Musto, D.F. (1987). 'The history of legislative control over opium, cocaine, and their derivatives', in R. Hamowy (ed.), *Dealing with Drugs: Consequences of Government Control*, Lexington Books, Lexington, MA and Toronto.
- Parlément Européen (1986). 'The policies of the member states towards combatting the drugs problem within the Community', *Série environnement, santé publique et protection des consommateurs no. 9*.
- Pommerehne, W.W. (1994). 'Drugs and politicians: the failures of the market and of public policy', *Economia delle scelte pubbliche*.
- Pontieri, F.E., G. Tanda, F. Orzi and G. Di Chiara (1996). 'Effects of nicotine on the nucleus accumbens and similarity to those of addictive drugs', *Nature*.
- Prinz, A. (1994). 'Rauschgift aus dem Supermarkt? Eine ökonomische Analyse der Drogenpolitik', *Zeitschrift für Wirtschafts- und Sozialwissenschaften*.
- Rehm, J. (1995). 'Konsumformen und Verbreitung illegaler Drogen in der Schweiz', in H. Fahrenkrug, J. Rehm, R. Müller, H. Klingemann and R. Linder (eds.), *Illegale Drogen in der Schweiz 1990–1993*, Seismo, Zurich.
- Reuband, K.H. (1992). *Drogenkonsum und Drogenpolitik. Deutschland und die Niederlande im Vergleich*, Leske Budrich, Opladen.
- Robins, L.N. (1993). 'The Vietnam veterans' rapid recovery from heroin addiction: a fluke or a normal expectation?', *Addictions*.
- Ruggiero, V. and N. South (1995). *Eurodrugs: Drug Use, Markets and Trafficking in Europe*, UCL Press, London.
- Rüter, C.F. (1988). 'Die strafrechtliche Drogenbekämpfung in den Niederlanden', *Zeitschrift für die gesamte Strafrechtswissenschaft*.
- Schivelbusch, W. (1980). *Das Paradies, der Geschmack und die Vernunft. Eine Geschichte der Genussmittel*, Hanser, Munich and Vienna.
- Schweizerische Fachstelle für Alkohol- und andere Drogenprobleme (SFA) (1989). 'Vier Jahre später: Genese und Stabilität von Alkohol- und Heroinabhängigen im Kontrollgruppenvergleich', mimeo., Bern.
- Stall, R. and P. Biernacki (1986). 'Spontaneous remission from the problematic use of substances', *International Journal of Addiction*.
- Suter, R. (1995). 'Die Entwicklung der Drogenpolitik in der Schweiz', in M. Erlei (ed.), *Mit dem Markt gegen Drogen!?*, Schäffer-Poeschel, Stuttgart.
- Thornton, M. (1991). *The Economics of Prohibition*, University of Utah Press, Salt Lake City.
- Uchtenhagen, A., F. Gutzwiller and A. Dobler-Mikola (eds.) (1996). 'Versuche für eine ärztliche Verschreibung von Betäubungsmitteln. Zweiter Zwischenbericht der Forschungsbeauftragten', mimeo., Institut für Suchtforschung und Institut für Sozial- und Präventivmedizin, University of Zurich.
- Uhlig, R. (1996). 'Internet addict left her husband for a computer', *Daily Telegraph*, 14 August.
- US Department of Justice (1994). *Sourcebook of Criminal Justice Statistics 1993*, US Government Printing Office, Washington, DC.
- Viscusi, W.K. (1994). 'Cigarette taxes and the social consequences of smoking', NBER Working Paper no. 4891.
- Vogt, I. and S. Scheerer (1989). 'Drogen und Drogenpolitik', in S. Scheerer and I. Vogt (eds.), *Drogen und Drogenpolitik. Ein Handbuch*, Campus, Frankfurt and New York.
- Waldorf, D. and P. Biernacki (1979). 'Natural recovery from heroin addiction: a review of the incidence literature', *Journal of Drug Issues*.
- Weber, G. and W. Schneider (1992). *Herauswachsen aus der Sucht illegaler Drogen. Selbstheilung, kontrollierter Gebrauch und therapiegestützter Ausstieg*, Institut für Sozialforschung, University of Münster.
- Wichmann, S. (1992). *Wirtschaftsmacht Rauschgift*, Fischer Taschenbuchverlag, Frankfurt a.M.

- Wijngaart, G.F. van de (1990). 'Competing perspectives on drug use: the Dutch experience', doctoral dissertation.
- Winick, Ch. (1962). 'Maturing-out of narcotic addiction', *US Bulletin on Narcotics*.
- World Health Organization (WHO) (1969). 'WHO Expert Committee on Addiction-Producing Drugs', *WHO Technical Report Series*, no. 3.
- Zinberg, N.E. (1979). 'Non-addictive opiate use', in R.L. Dupont (ed.), *Handbook on Drug Abuse*, National Institute on Drug Abuse, Washington, DC.